

In Re Patent Application of:  
**CAIN ET AL.**  
Serial No. 10/658,021  
Filing Date: **SEPTEMBER 9, 2003**

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#### REMARKS

Applicants thank the Examiner for the thorough examination of the present application. Paragraph 0056 has been amended to correct the inadvertent prime notation reference number as helpfully pointed out by the Examiner. The specification has been amended to update the status of incorporated references. A revised specification and a marked up version of the specification are submitted herewith.

The publication date for the prior art article indicated as not considered by the Examiner has now been located. Accordingly, another IDS is being filed herewith and, the Examiner is asked to please confirm consideration of this prior art article.

Independent Claims 1, 14, and 24 have been amended to include the subject matter of dependent Claims 8, 18, and 31 respectively. Dependent Claims 4, 8, 18, 27, and 31 have been cancelled for consistency. The Examiner's objection to the phrase "the at least one selected route" lacking an antecedent basis in dependent Claim 4 is moot in light of the claim amendments.

The patentability of the claims is discussed in detail below.

#### I. The Claimed Invention

The present invention is directed to a mobile ad hoc network (MANET). Amended independent Claim 1, for example, recites a mobile ad hoc network comprising a plurality of mobile nodes, each comprising a wireless communications device providing a selectable signal transmission pattern and a

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controller connected thereto. The controller operates in accordance with a multi-layer protocol hierarchy for at an upper protocol layer, establishing a quality-of-service (QoS) threshold. At least one intermediate protocol layer below the upper protocol layer, selects between unicast communication mode and a multicast communication mode based upon the QoS threshold. At a lower protocol layer below the at least one intermediate protocol layer, the controller cooperates with the wireless communications device to transmit data to at least one destination mobile node base upon the selected communications mode, and determines a QoS metric for the at least one selected route. The controller also operates in accordance with the mulit-layer protocol hierarchy for determining, at the at least one intermediate layer, whether the QoS metric falls below the QoS threshold. At the lower protocol layer, the data is modulated using a first modulation technique if the QoS metric is greater than or equal to the QoS threshold, and otherwise uses a second modulation technique.

Amended independent Claim 14 is directed to a similar MANET. Amended independent Claim 24 is a method counterpart of independent Claim 1.

## **II. The Claims Are Patentable**

The Examiner rejected prior dependent Claims 8 and 31 over a combination of Tasman et al. (U.S. Application No. 2002/0080755) and Fong et al. (U.S. Application No. 2004/0013102). Prior dependent Claim 18 was rejected in further view of Sholander et al. (U.S. Patent No. 7,177,295).

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As applicable to amended independent Claims 1, 14 and 24, the Examiner correctly recognized that Tazman et al. does not disclose the wireless communications device modulating the data using a first modulation technique if the QoS metric is greater than or equal to the QoS threshold, and otherwise using a second modulation technique. The Examiner cited Fong et al. as disclosing these noted deficiencies.

Applicants respectfully submit the Examiner's proposed combination of Tasman et al. et al. and Fong et al. is improper. Initially, Applicants point out that Fong et al., whose primary objective is a method of mapping information in a wireless communications system, teaches mapping information using shared and dedicated channels having fixed and adaptive modulation respectively. The QoS layer in Fong et al., which supports transfer scheduling, rate control, and modulation, is "conveniently implemented as a distributed layer in each base station." (Paragraph 0039). Conversely, Tasman et al. discloses a wireless packet router that maintains multiple forwarding tables and radio parameters necessary to support quality of service guarantees in a wireless ad hoc network. "Wireless ad-hoc networks preferably do not rely on base stations and other fixed infrastructure," such as a base station. (Paragraph 0004). Accordingly, amended independent Claims 1, 14 and 24 are patentable for this reason alone, that is, because the selective combination of Tasman et al. and Fong et al. is improper.

The Examiner further cited Sholander et al. in combination with Tasman et al. and Fong et al. in rejecting prior dependent Claim 18, as now pertinent to amended

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independent Claim 14. Sholander et al. discloses a proactive and reactive hybrid routing protocol for a wireless ad hoc network, and further states that mobile ad hoc networks "may be deployed rapidly with little or no assistance and do not have a central network structure such as cellular-base stations or overhead satellite assets." (Col. 1, lines 57-62). Sholander et al. fails to make up for the improper combination of Tasman et al. and Fong et al. Indeed, Sholander et al. is also directed to an ad hoc network that is incompatible with the network of Fong et al. Accordingly, amended independent Claim 14 is also patentable for this reason.

Applicants submit that a person having ordinary skill in the art would be taught away from combining the ad-hoc network architecture of Tasman et al. (and/or Sholander et al.) with the fixed structure architecture of Fong et al. Additionally, Applicants respectfully submit that the Examiner is using impermissible hindsight reconstruction based on Applicants' specification in an attempt to produce claimed invention by selectively assembling disjoint pieces of the prior art.

Applicants submit that amended independent Claims 1, 14, and 24 are patentable. Their respective dependent claims, which recite still further distinguishing features, are also patentable and require no further discussion herein.

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### III. Conclusion

In view of the amendments and arguments presented above, it is submitted that all of the claims are patentable. Accordingly, a Notice of Allowance is respectfully requested in due course. If the Examiner determines any remaining informalities exist, he is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,



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### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450, on this 17<sup>th</sup> day of July, 2007.

